UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,044	03/27/2004	John J. Williams JR.	42027	9536

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THE LAW OFFICE OF KIRK D. WILLIAMS
PO BOX 61538
DENVER, CO 80206-8538

EXAMINER
HICKS, MICHAEL J

ART UNIT	PAPER NUMBER
2165	

DATE MAILED: 07/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 March 2004</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-26</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-26</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>27 March 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>1/13/06; 1/17/06</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-26 Pending.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1-26 rejected under 35 U.S.C. 102(b) as being anticipated by Yun et al.

("An Efficient Locking Protocol for Home Based Lazy Release Consistency", Proceedings of the First

IEEE/ACM International Symposium on Cluster Computing and The Grid, Pgs. 527-532; May 2001 and

referred to hereinafter as Yun).

As per Claim 1, Yun discloses an apparatus for protecting data using locks (i.e. *"In

this paper we present an efficient lock protocol for HLRC."* The preceding text excerpt clearly indicates

that the apparatus protects data using locks.) (Abstract), the apparatus comprising: a lock

manager configured to control access via a lock to protected data maintained in native

storage independent of the lock manager (i.e. *"First, proper home assignment is hard due to

migratory behavior of lock protected data."* The preceding text excerpt clearly indicates that a lock

manager exists to control access to protected data via a lock, and that the lock protected data is

migratory (e.g. it may reside in native storage which is independent of the lock manager).) (Page 528,

Column 2, Paragraph 1), wherein the lock manager does not access said protected data

from said native storage (i.e. *"We suggest a new lock protocol for HLRC. The main ideas of our protocol are as follows. : Releaser sends diffs for expected pages to be used by acquirer. When a page fault occurs in acquiring process, it applies received diffs for that page instead of fetching a whole page from the home. In this way, our protocol reduces page fault handling time and lock-waiting time."* The preceding text excerpt along with Figure 2 clearly indicates that only the processes requesting the locks gain access to the protected data, and the lock manager determines the order in which processes gain that access.) (Page 528, Column 2, Paragraph 3); and a plurality of requesters (See Figure 2, The plurality of requestor being P0, P1, and P2); wherein the lock manager is configured to receive lock requests for the lock from each of the plurality of requesters (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section."* The preceding text excerpt clearly indicates that processes (e.g. requestors) may request and acquire access to locks through the lock manager.) (Page 529, Paragraph 2), and to selectively grant said lock requests which includes communicating grants from the lock manager to the plurality of requesters (i.e. *"Releaser of that lock decides pages to send diffs based on the information from the lock request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that the locks are selectively granted to the requestors (e.g. processes) and that the grant request are communicated to the acquiring processes.) (Page 529, Paragraph 3), wherein at least one of said communicated grants includes said protected data (i.e. *"Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that the protected data (e.g. diffs) are included with the lock grant message.) (Page 529, Paragraph 3).

As per Claim 2, Yun discloses at least one of said communicated grants does not include said protected data (i.e. *"If it exceeds a page size, diffs for that page are not sent."* The preceding text excerpt clearly indicates that the grant message may not include the protected data (e.g. diffs) under certain conditions.) (Page 529, Paragraph 3).

As per Claim 3, Yun discloses each of said communicated grants includes an indication of whether or not said protected data is being communicated therewith (i.e. *"Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates the grant message that includes the protected data also includes write notices (e.g. indication of the protected data/diffs).) (Page 529, Paragraph 3).

As per Claim 4, Yun discloses each of said communicated grants includes an indication of whether or not said protected data is requested to be sent to the lock manager with a corresponding release of the lock (i.e. *"To make a page up-to-date only diffs are transferred while the whole page is transferred in base HLRC."* The preceding text excerpt along with Figure 2 clearly indicates that if no other processes are requesting the lock, that the protected data is written back to storage, rather than being forwarded to a next acquiring process. In order to make this determination and perform this operation, an indication of whether or not to forward the protected data would have to be included in the grant message.) (Figure 2; Page 530, Column 1, Paragraph 1).

As per Claim 5, Yun discloses each of said lock requests includes an indication of whether or not the corresponding one of the plurality of requesters will accept said protected data from the lock manager (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section."* The preceding text excerpt clearly indicates that the

request includes an indication of what pages of the protected data will be needed by the requesting

process. This will indicate whether the process will accept the current pages of the protected data from

the lock manager.) (Page 529, Paragraph 2).

As per Claims 6, 8, and 10, Yun discloses a method performed by a lock

manager, computer readable medium, and lock manager controlling access to protected

data maintained in native storage independent of the lock manager (i.e. *"First, proper home

assignment is hard due to migratory behavior of lock protected data."* The preceding text excerpt clearly

indicates that a lock manager exists to control access to protected data via a lock, and that the lock

protected data is migratory (e.g. it may reside in native storage which is independent of the lock

manager).) (Page 528, Column 2, Paragraph 1), wherein the lock manager does not access

said protected data from said native storage (i.e. *"We suggest a new lock protocol for HLRC.

The main ideas of our protocol are as follows. : Releaser sends diffs for expected pages to be used by

acquirer. When a page fault occurs in acquiring process, it applies received diffs for that page instead of

fetching a whole page from the home. In this way, our protocol reduces page fault handling time and lock-

waiting time."* The preceding text excerpt along with Figure 2 clearly indicates that only the processes

requesting the locks gain access to the protected data, and the lock manager determines the order in

which processes gain that access.) (Page 528, Column 2, Paragraph 3), the method comprising:

receiving a release of a lock for use in controlling access to said protected data, the

release including said protected data (i.e. *"Releaser of that lock decides pages to send diffs based

on the information from the lock request. To minimize the effect of diff accumulation problem [8], selection

is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not

sent. Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text

excerpt clearly indicates that a lock is released along with protected data (e.g. diffs).) (Page 529,

Paragraph 3); identifying a next requester to be granted the lock in response to said

receiving the release of the lock (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section...Releaser sends diffs for expected pages to be used by acquirer."* The preceding text excerpt clearly indicates that the next acquirer is identified upon release of the lock.) (Page 529, Paragraph 2; Page 528, Column 2, Paragraph 3); copying said protected data from the release into a grant message (i.e. *"Releaser of that lock decides pages to send diffs based on the information from the lock request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that the protected information (e.g. diffs) are included in the lock grant message.) (Page 529, Paragraph 3); and sending the grant message to the next requester, the grant message including said protected data (i.e. *"Releaser of that lock decides pages to send diffs based on the information from the lock request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write notices as a lock grant message."* The preceding text excerpt clearly indicates that the protected information (e.g. diffs) are sent to the lock acquirer in the lock grant message.) (Page 529, Paragraph 3).

As per Claims 7, 9, and 11, Yun discloses the grant message includes an indication of that said protected data is requested to be sent to the lock manager in a release message corresponding to the grant message if another requester is waiting for the lock, else an indication that said protected data is not requested to be sent to the lock manager in the release message (i.e. The Figure 2 indicates that if another process is requesting the lock, the protected data is sent with the release and grant messages, but if no other process is requesting the lock then the data is stored (e.g. not sent to the lock manager). In order to

produce this behavior, an indication of whether or not to transmit the protected data back to the lock

manager is needed.) (Figure 2).

As per Claims 12, 17, and 22, Yun discloses a method performed by a lock

manager, computer readable medium, and lock manager controlling access to protected

data maintained in native storage independent of the lock manager (i.e. *"First, proper home*

assignment is hard due to migratory behavior of lock protected data." The preceding text excerpt clearly

indicates that a lock manager exists to control access to protected data via a lock, and that the lock

protected data is migratory (e.g. it may reside in native storage which is independent of the lock

manager).) (Page 528, Column 2, Paragraph 1), wherein the lock manager does not access

said protected data from said native storage (i.e. *"We suggest a new lock protocol for HLRC.*

The main ideas of our protocol are as follows. : Releaser sends diffs for expected pages to be used by

acquirer. When a page fault occurs in acquiring process, it applies received diffs for that page instead of

fetching a whole page from the home. In this way, our protocol reduces page fault handling time and lock-

waiting time." The preceding text excerpt along with Figure 2 clearly indicates that only the processes

requesting the locks gain access to the protected data, and the lock manager determines the order in

which processes gain that access.) (Page 528, Column 2, Paragraph 3), the method comprising:

receiving locking requests for a lock controlling access to said protected data from a first

requester and a second requester (i.e. *"Acquirer sends a lock request with information of expected*

pages to be used inside a critical section." The preceding text excerpt along with Figure 2 clearly

indicates that lock requests are received for controlling access to protected data. Figure 2 illustrates that

multiple requesters may be present.) (Figure 2; Page 529, Paragraph 2); sending a first grant

message to the first requester, the first grant message not including said protected data

(i.e. *"Releaser sends diffs for expected pages to be used by acquirer."* The preceding text excerpt clearly

indicates that the protected data/diffs is sent with a grant request after a release. If no release has been

made prior to the grant, then the protected data will not be sent along.) (Page 528, Column 2, Paragraph

3), and in response to identifying one or more requesters is waiting for the lock after the

first requester, including an indication to return said protected data in the first grant

message (i.e. *"Releaser of that lock decides pages to send diffs based on the information from the lock*

request. To minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to

be sent for a page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are

sent with write notices as a lock grant message." The preceding text excerpt clearly indicates that if the

lock request information is received, indicating another process is requesting the lock, that the protected

data (e.g. diffs) will be returned. This indicates that an indication to return the protected data was also

transmitted.) (Page 529, Paragraph 3); receiving a first release message corresponding to the

first grant message for the lock from the first requester, the first release message

including said protected data (i.e. *"Releaser of that lock decides pages to send diffs based on the*

information from the lock request. To minimize the effect of diff accumulation problem [8], selection is

based on the size of diffs to be sent for a page. If it exceeds a page size, diffs for that page are not sent.

Diffs of selected pages are sent with write notices as a lock grant message." The preceding text excerpt

clearly indicates that the release message includes the protected data (e.g. diffs).) (Page 529, Paragraph

3).

As per Claims 13, 18, and 23, Yun discloses sending a second grant message to

the second requester, the second grant message including said protected data (i.e.

"Releaser of that lock decides pages to send diffs based on the information from the lock request. To

minimize the effect of diff accumulation problem [8], selection is based on the size of diffs to be sent for a

page. If it exceeds a page size, diffs for that page are not sent. Diffs of selected pages are sent with write

notices as a lock grant message." The preceding text excerpt clearly indicates that the protected data is

sent in the second grant message.) (Page 529, Paragraph 3), and an indication of whether or not

to send said protected data in a second release message (i.e. *"Acquirer sends a lock request*

with information of expected pages to be used inside a critical section...Releaser sends diffs for expected

pages to be used by acquirer." The preceding text excerpt clearly indicates that an indication of the next

requestor, if one exists, is sent. This acts as an indication to send the protected data along with the

release message.) (Page 529, Paragraph 2; Page 528, Column 2, Paragraph 3).

As per Claims 14, 19, and 24, Yun discloses the second grant message includes

an indication to send said protected data in the second release message in response to

identifying another requestor is waiting for access to the lock (i.e. *"Acquirer sends a lock*

request with information of expected pages to be used inside a critical section...Releaser sends diffs for

expected pages to be used by acquirer." The preceding text excerpt along with Figure 2 clearly indicates

that if another process is waiting for access to the lock, it is indicated in the grant message, and the

protected data (e.g. diffs) are sent with the release message.) (Figure 2; Page 529, Paragraph 2; Page

528, Column 2, Paragraph 3).

As per Claims 15, 20, and 25, Yun discloses the second grant message includes

an indication not to send said protected data in the second release message in

response to identifying another requestor is not waiting for access to the lock (i.e.

"Acquirer sends a lock request with information of expected pages to be used inside a critical

section...Releaser sends diffs for expected pages to be used by acquirer." The preceding text excerpt

along with Figure 2 clearly indicates that if another process is not waiting for the lock, another lock

request will not be present in the grant message, and the protected data will be stored instead of sent

with the release message.) (Figure 2; Page 529, Paragraph 2; Page 528, Column 2, Paragraph 3).

As per Claims 16, 21, and 26, Yun discloses the second grant message includes an indication not to send said protected data in the second release message (i.e. *"Acquirer sends a lock request with information of expected pages to be used inside a critical section...Releaser sends diffs for expected pages to be used by acquirer."* The preceding text excerpt along with Figure 2 clearly indicates that if another process is not waiting for the lock, another lock request will not be present in the grant message.) (Figure 2; Page 529, Paragraph 2; Page 528, Column 2, Paragraph 3); and the method comprises in response to said indication not to send said protected data in the second release message, the second requester storing said protected data and not including said protected data in the second release message (i.e. Figure 2 clearly indicates that if no other process is requesting the lock on the protected data, the protected data is stored, and it is not included in the release message.) (Figure 2).

Points of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Hicks whose telephone number is (571) 272-2670. The examiner can normally be reached on Monday - Friday 8:30a - 5:00p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on (571) 272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael J Hicks
Art Unit 2165
Phone: (571) 272-2670
Fax: (571) 273-2670

JEFFREY GAFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100